ABSTRACT

Address by David C. Evans

IMPROVING COMMUNICATION BETWEEN MAN AND COMPUTERS: SOME RECENT DEVELOPMENTS

Presented at

1967 Conference of Associated University Bureaus of Business and Economic Research

11 October 1967

As a group you are probably as aware of one role of the computer, the automation of large scale clerical operations, as any group. Beginning with the pioneering work of Herman Hollerith for the 1890 census there has been continuous progress in this direction. In my own experience I have seen the capability of computing systems to perform well defined repetitive tasks increase by a factor greater than one million. At the same time as this great progress has been made, there has been little progress until very recent years in giving computing systems the capability to aid man in creative activities.

It is my belief that this is not particularly due to the inherent limitations of information processing systems but to the difficulties of man-machine communication. The difficulties are due to many causes. Physical access to machines has been limited on the basis of real or imagined economic arguments about machine efficiency. Severe limitations have existed and continue to exist in the languages employed for instructing computers. The kinds of data representation are severely restricted by arbitrary format rules. The physical equipment by means of which men communicate with computer are expensive and poorly suited to the task.

Current research is doing much to improve the situation. The cost of communicating directly with a computing system has been reduced by lower unit cost of computing and by the sharing (time-sharing) of a single computer by many users at the same time. The computer then works at the demand of the man rather than the man working at the demand of the computer. The development of large capacity (10^{12} bits) storage devices and reasonably structured file systems provides for controlled access to information, making access economical, assuring privacy when required, and permitting common access by persons engaged in cooperative activity. The capability of computers to receive graphical input and to generate graphical output provides opportunity for improved communication with the computer. New graphic techniques, including the capability recently developed at the University of Utah, to produce photograph-like pictures of objects described only in the computer memory, will soon be generally available to enrich man-computer communication.